

cooling the primary fraction as water is evaporated from the primary fraction under substantially adiabatic conditions by reducing the pressure to precipitate N-(phosphonomethyl)glycine product crystals from the primary fraction to produce a primary product slurry comprising precipitated N-(phosphonomethyl)glycine product crystals and a primary mother liquor; and

precipitating N-(phosphonomethyl)glycine product crystals from an aqueous secondary crystallization feed mixture comprising N-(phosphonomethyl)glycine product contained in said secondary fraction to produce a secondary product slurry comprising precipitated N-(phosphonomethyl)glycine product crystals and a secondary mother liquor.

[ Please replace claim 2 with the following: ]

2. (amended) The process as set forth in claim 1 wherein water is evaporated from the aqueous secondary crystallization feed mixture to precipitate N-(phosphonomethyl)glycine product crystals from the aqueous secondary crystallization feed mixture.

*A1*  
Please cancel claims 3 and 4.

~~Please replace claim 5 with the following:~~

5. (amended) The process as set forth in claim 1 wherein the evaporation cools the primary fraction to a temperature of from about 45°C to about 80°C.

[ Please replace claim 6 with the following: ]

6. (amended) The process as set forth in claim 1 wherein from about 5% to about 30% by weight of the primary fraction is evaporated.

Q2 [ Please replace claim 7 with the following: ]

7. (amended) The process as set forth in claim 1 further comprising decanting primary mother liquor from the precipitated N-(phosphonomethyl)glycine product crystals in the primary product slurry.

Please replace claim 10 with the following:

10. (amended) The process as set forth in claim 1 wherein the oxidation catalyst comprises a heterogenous catalyst comprising a noble metal deposited on a carbon support.

Q3 [ Please replace claim 11 with the following: ]

11. (amended) The process as set forth in claim 1 wherein the N-(phosphonomethyl)iminodiacetic acid substrate is oxidized in a liquid reaction medium in contact with the oxidation catalyst and the chloride ion concentration in the liquid reaction medium is maintained at no greater than about 500 ppm by weight.

Please replace claim 18 with the following:

Q4 18. (amended) The process as set forth in claim 1 wherein ~~the process further comprises purging secondary mother liquor for~~ removal of by-products and impurities from the process.

Please replace claim 20 with the following:

Q5 20. (amended) The process as set forth in claim 1 wherein the primary fraction is from about 30% to about 85% of the reaction product solution.

Please replace claim 27 with the following:

27. (amended) The process of claim 1 wherein evaporative cooling of said primary fraction comprises:

introducing an aqueous evaporation feed mixture into an evaporation zone, said aqueous feed mixture comprising said primary fraction;

evaporating water from said aqueous evaporation feed mixture in said evaporation zone in the presence of solid particulate N-(phosphonomethyl)glycine product, thereby producing a vapor phase comprising water vapor, precipitating N-(phosphonomethyl)glycine product from the aqueous liquid phase, and producing an evaporation product comprising N-(phosphonomethyl)glycine product solids and a primary mother liquor that is substantially saturated or supersaturated in N-(phosphonomethyl)glycine product; and

maintaining a ratio of particulate N-(phosphonomethyl)glycine product solids to primary mother liquor in said evaporation zone which exceeds the ratio of N-(phosphonomethyl)glycine product solids incrementally produced by the effects of evaporation to mother liquor incrementally produced thereby.

*96*  
~~Please replace claim 38 with the following:~~

*97*  
38. (amended) The process as set forth in claim 23 wherein said secondary fraction is introduced into a secondary reactor system comprising a tertiary oxidation reaction zone, unreacted -(phosphonomethyl)iminodiacetic acid substrate contained in said secondary fraction being converted to N-(phosphonomethyl)glycine product in said tertiary oxidation reaction zone to produce a tertiary oxidation reaction mixture, said secondary crystallization feed mixture comprising N-

Q7 (phosphonomethyl)glycine product contained in said tertiary oxidation reaction mixture.

Please replace claim 44 with the following:

44. (amended) A process for making an N-(phosphonomethyl)glycine product, the process comprising:  
introducing an aqueous feed stream comprising an N-(phosphonomethyl)iminodiacetic acid substrate into an oxidation reactor system;  
oxidizing the N-(phosphonomethyl)iminodiacetic acid substrate in the oxidation reactor system in the presence of an oxidation catalyst to produce a reaction product solution containing N-(phosphonomethyl)glycine product;  
precipitating N-(phosphonomethyl)glycine product crystals from the reaction product solution to produce a primary product slurry comprising precipitated N-(phosphonomethyl)glycine product crystals and a primary mother liquor;  
separating precipitated N-(phosphonomethyl)glycine product from said primary mother liquor; and  
evaporating water from the primary mother liquor, thereby precipitating additional N-(phosphonomethyl)glycine product crystals and producing a secondary mother liquor.

Q8 Please cancel claims 65-95 and 101-217.

Please replace claim 227 with the following:

227. (amended) The process as set forth in claim 218 wherein N-(phosphonomethyl)iminodiacetic acid substrate is oxidized in said aqueous liquid reaction medium in a primary oxidation

reaction zone, thereby producing a primary oxidation product, the process further comprising:

dividing said primary oxidation product into a finishing reaction feed mixture and a primary crystallization fraction, said primary crystallization feed mixture comprising said primary crystallization fraction;

introducing said finishing reaction feed mixture into a finishing reaction zone; and

a9 catalytically oxidizing residual N-(phosphonomethyl)iminodiacetic acid substrate contained in said finishing reaction feed mixture to N-(phosphonomethyl)glycine product to produce a finished reaction mixture.

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Please cancel claim 326.

Please replace claim 337 with the following:

337. (amended) A continuous process for the catalytic oxidation of an N-(phosphonomethyl)iminodiacetic acid substrate to produce an N-(phosphonomethyl)glycine product, comprising:

introducing a first component feed stream comprising an N-(phosphonomethyl)iminodiacetic acid substrate into the first of a series of continuous reaction zones, each of said series of reaction zones comprising an oxidation catalyst;

introducing an oxidant into said first of said series of reaction zones;

a10 catalytically oxidizing said substrate in said first reaction zone to produce an intermediate reaction mixture containing N-(phosphonomethyl)glycine product;

transferring the intermediate reaction mixture exiting said first reaction zone to the second of said series of reaction zones;

catalytically oxidizing said substrate in each of said series of reaction zones;

withdrawing an intermediate reaction mixture from each of said reaction zones;

introducing into each succeeding reaction zone the intermediate reaction mixture produced in the preceding reaction zone;

introducing an additional component feed stream into each of one or more of said reaction zones succeeding said first reaction zone in said series, each said additional feed stream comprising an N-(phosphonomethyl)iminodiacetic acid substrate;

introducing an oxidant into one or more said reaction zones succeeding said first reaction zone in said series; and

withdrawing a final reaction product from the last in said series of reaction zones.

[Please replace dependent claim 337 with the following:]

338. (amended) A process as set forth in claim 337 wherein  
~~an additional component feed stream comprising an N-~~  
(phosphonomethyl)iminodiacetic acid substrate is introduced into each of said series of reaction zones.

[Please replace dependent claim 338 with the following:]

339. (amended) A process as set forth in claim 337 wherein an oxidant is introduced into each of said series of reaction zones.

Q10

[ Please replace dependent claim 339 with the following: ]

340. (amended) A process as set forth in claim 339 wherein there are at least three continuous reaction zones in said series.

[ Please replace dependent claim 340 with the following: ]

341. (amended) A process as set forth in claim 337 wherein one or more of said additional component feed streams contains solid N-(phosphonomethyl)iminodiacetic acid substrate.

[ Please replace dependent claim 341 with the following: ]

342. (amended) A process as set forth in claim 337 wherein said N-(phosphonomethyl)iminodiacetic acid substrate comprises a water-soluble salt of N-(phosphonomethyl)iminodiacetic acid and the average concentration of said salt among said component feed solutions is such that said final oxidation reaction product contains at least about 10% by weight of a water-soluble salt of N-(phosphonomethyl)glycine on an acid equivalent basis.

[ Please replace dependent claim 342 with the following: ]

343. (amended) A process as set forth in claim 342 wherein said average concentration of said salt in said component feed solutions is such that the final reaction product contains at least about 20% by weight of a water-soluble salt of N-(phosphonomethyl)glycine on an acid equivalent basis.

[ Please replace dependent claim 343 with the following: ]

344. (amended) A process as set forth in claim 343 wherein said average concentration of said salt in said component feed solutions is such that the final reaction product contains at

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least about 28% by weight of a water-soluble salt of N-(phosphonomethyl)glycine on an acid equivalent basis.

[ Please replace dependent claim 344 with the following: ]

345. (amended) A process as set forth in claim 337 wherein the final reaction product is concentrated by removal of water therefrom.

[ Please replace dependent claim 345 with the following: ]

346. (amended) A process as set forth in claim 345 wherein said final reaction product is introduced into a flash evaporation zone wherein the pressure is lower than the vapor pressure of said final reaction product at the temperature at which it exits the last in said series of reaction zones.

[ Please replace dependent claim 346 with the following: ]

347. (amended) A process as set forth in claim 345 wherein removal of water from said final oxidation reaction product produces a concentrated solution containing at least about 40% by weight of a water-soluble salt of N-(phosphonomethyl)glycine on an acid equivalent basis.

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